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THE ANATOMICAL CHANGES CAUSED BY SEPTICÆMIA AND PYÆMIA.[1]

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SEPTICÆMIA is a disease caused by changes in the blood, resulting from the absorption of the products of decomposition. The anatomical appearances after death are as follows: Decomposition is seen to commence a very few hours after death, and goes on with great rapidity.[2] Rigor mortis is frequently absent, yet we occasionally find it when all the other signs of decomposition are marked. The skin has a peculiar reddish-brown color, and punctiform hæmorrhages with petecchiæ are occasionally present. The abdominal wall becomes of a greenish color very soon after death, livid spots appear early, and sometimes emphysema is met with, which may be diffused throughout all the organs. Imbibition of the skin also appears in the course of the veins. The muscles are flabby and dark colored, and on microscopic examination we may often see a fine granular degeneration of the single muscular fibrils.

A microscopic examination of the *blood* shows that many of the corpuscles are destroyed, and that the serum is stained by their coloring matter; it is therefore thin, brownish, it has lost its power of reddening on exposure to air,[3] it rapidly discolors the tissues, and all the coagula are usually loose and flabby. Vogel,[4] Scherer, and others have found it to have an acid reaction. Bacteria have been observed in the blood,[5] but Orth [6] and Birch-Hirschfeld [7] say that their appearance is not constant, a circumstance which is explained by Koch [8] on the ground of the use of inefficient methods of examination. Bubbles of gas may sometimes be found in the blood.

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[1] Read before the Massachusetts Medico-Legal Society, June 10, 1879.

[2] Birch-Hirschfeld has seen the greatest part of the body turn green within twelve hours after death in summer. Lehrbuch der pathologischen Anatomie, page 1227.

[3] Vogel. Handbuch der speciellen Pathologie und Therapie. Virchow, Band i. page 456.

[4] Loc. cit.

[5] Collman von Schatteburg. Jahresbericht für dem. Jahre 1875, i., page 369. Virchow und Hirsch. Pasteur. Bulletin de l'Académie de Médecine, 1878. Allgemein medicinische Central-Zeitung, February 1, 1879.

[6] Compendium der pathologischen anatomischen Diagnostic.

[7] Loc. cit.

[8] Wundinfectionskrankheiten, Leipzig, 1878.

The *heart* is flabby, anæmic, soft, and on microscopic examination very fine fat drops are seen in the muscular fibrils, while in the highest degrees of this degeneration the striæ are lost. The color of the heart is pale yellow, and on section the knife becomes covered with a layer of fat.[1] This appearance, however, is sometimes absent in those cases where the parenchymatous degeneration of other organs is pronounced. There are frequently ecchymoses under the endocardium, especially in the left ventricle,[2] and the endocardium, as well as the intima of the blood-vessels, shows imbibition of the blood coloring matter. The fluid found in the pericardium and pleuræ is rarely colorless, but is usually stained with blood. The pulmonary surface of the pleura is often covered with numerous ecchymoses, the bronchial mucous membrane stained, the secretion colored with blood, and the lungs œdematous, or sometimes strewn with ecchymoses.

Usually the *peritoneal sac* contains but a small quantity of serous reddish fluid; the intestines are greatly distended with gas, and their walls may be infiltrated with serum when there is a considerable amount of exudation in the peritonæum.[3] Hyperæmia of the mucous membrane of the stomach may be found with swelling of the follicles; this hyperæmia may extend into the intestine, and be accompanied by swelling of the solitary glands and Peyer's patches; and there may be submucous punctiform hæmorrhages, while the contents of the gut are mixed with shreds of epithelium; or, in more severe cases, the intestine may contain blood.[4] The mesenteric glands are usually swollen and hyperæmic.

The *spleen* is large, flabby; the parenchyma is unusually soft, and may be even of a pulpy consistency; the color is mostly dark cherry-red or chocolate; the trabeculæ of the stroma are hidden by the swollen pulp; the Malpighian follicles are usually not sharply defined, but are indistinct, or may be hyperplastic. Sometimes, also, numerous hæmorrhages are seen standing in small groups, which are distinguished from the rest of the splenic tissue as black-red points.

In the *liver* we may distinguish the different stages of parenchymatous degeneration, and trace it from the commencing cloudy swelling of the hepatic cells up to a complete destruction of them.

The *kidneys* are ordinarily more or less swollen; the cortex exhibits the same degeneration as the liver, the epithelium of the convoluted urinary tubules being in a condition of fatty degeneration, or perhaps having fallen in pieces. The mucous membrane of the bladder may sometimes be found to be in a catarrhal hyperæmic condition, especially in cases of childbirth, but it is usually healthy.

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[1] Winckel. Pathologie und Therapie des Wochenbettes, pages 206 and 318.

[2] Winckel. Loc. cit., page 318, etc.

[3] Winckel. Loc. cit., page 283.

[4] Birch-Hirschfeld. Loc. cit.

In the *central nervous system* hyperæmia of the membranes and gray matter of the brain may be met with, though it is usually normal.

After parturition or abortion, we may find the source of infection in the genital organs, a tear of the cervix or vagina, a foul endometritis, or a localized gangrenous spot. If the disease is of traumatic origin, there are usually diffuse, bloody, or ichorous infiltrations of varying extent and depth at the seat of injury.

Birch-Hirschfeld speaks of another class of cases, in which softened, putrid thrombi, arising from a focus of gangrene, are borne off in the circulation, and give rise to embolic gangrenous spots, usually situated in the lungs. In still another class of cases there may be an inflammation of the pleura, pericardium, or peritonæum. The amount of effusion is small, and the false membrane covering the surface is thin and delicate.

PYÆMIA is a general infection, probably roused by specific organisms (bacteria), and starting from surfaces of wounds or the foci of primary purulent inflammation. It may be conveniently divided into three groups: —

(1.) Cases where there is an unexplained tendency to localization in the serous membranes, synovial membranes, and endocardium. We may say that the disease has a certain affinity to these membranes. Diffuse sero-purulent pleuritis, pericarditis, peritonitis, occurs without any local affection of the organs which these membranes cover; more rarely there is meningitis, purulent synovitis, or ulcerative endocarditis. The inflammation is apt to crop out in several serous membranes at the same time. This form is rare, however.

(2.) The second group includes those cases where the mucous membranes, and especially that of the digestive canal, are the parts chiefly affected. At the examination we find the appearances of simple catarrh of the small or large intestine, with accompanying swelling of both the solitary glands and Peyer's patches. We see in addition, not unfrequently, diphtheritic infiltration with the formation of sloughs, and a greater or less extensive loss of substance in the mucous membrane. These cases are also rare.

(3.) The third group comprises the most frequent forms of pyæmia, the pyæmia multiplex of Hueter, metastatic or embolic pyæmia. As a rule, there is venous thrombosis in the periphery of the original point of lesion; these thrombi do not become organized, but undergo softening, especially a foul softening, caused or favored by ichorous suppuration in the vicinity of the vein. Portions of these thrombi, swept away by the circulation, become wedged in the vessels of the lungs, and give rise to abscesses; and secondary thrombi may be borne thence, and produce metastatic abscesses in the heart, spleen, liver, kidneys, etc.

The following are the chief post-mortem appearances found in the different organs: —

The *skin* is flabby and pale, sometimes intensely icteric. Sudamina are not uncommon, and their contents may be purulent.[1] Small vesicles with a hæmorrhagic halo, pemphigus, hæmorrhagic spots with a yellow pustular centre,[2] and punctiform hæmorrhages [3] are recorded.[4] Leube [5] found a sphere of bacteria in an abscess cut out from the skin of a pyæmic patient just before death. Salmonsen [6] also found bacteria in abscesses of the joints in a living person, death taking place a few days later.

The *brain* and its membranes usually show no changes, yet œdematous swelling of the pia [7] is not very rare. Leube [8] met with injection of the membranes and minute extravasations of blood into the cortical substance of the brain. Waldeyer [9] and Leube [10] have observed purulent meningitis, and Braidwood [11] records metastatic abscesses of the brain. Abscesses of the brain were found recently in one of the cases at the City Hospital: they were small in size, not larger than a bean, and were situated in the cortex to the number of five or six.

Conjunctival hæmorrhages are mentioned by Leube,[12] and retinal hæmorrhages were also observed by him and by Litten.[13] Virchow [14] has found embolism of the retinal and choroidal vessels, and Meckel first described "pyæmic ophthalmia" in volume v., page 276, of the Charité-Annalen.

The *heart* is usually of normal consistency and color,[15] though Birch-Hirschfeld [16] says abscesses may be found in it in at least one third of the cases of metastatic pyæmia, on careful search. They begin as pale yellow lines or points, and a microscopic examination shows no pus, but an abundance of micrococci, single or in colonies, which frequently lie in the interior of vessels; or they may be discovered in the muscular fibrils.[17] After suppuration has occurred, the bacteria are difficult to find. Suppuration extends between the muscular fibrils, which fall to pieces, and may leave an abscess as large as a filbert. They usually form in the left ventricle, but may be found in the right side,[1] or in the papillary muscles.[2] The granular and fatty degenerations of the muscular fibrils are not unfrequently met with,[3] and numerous instances of diphtheritic endocarditis are recorded.[4] The pericardium may be covered with a fibrino-purulent membrane, as a complication of the metastatic process; or, independent of it, there may be the diffuse pericarditis already alluded to.

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[1] Anstie. Lancet, January 22, 1870, page 117. Cameron. Lancet, July, 1878, page 65.

[2] Leube. Deutsches Archiv für klinische Medicin, October, 1878, page 244.

[3] Charité Annalen, iii., page 191.

[4] Gazette hebdomadaire, No. 46, 1868. Comegys. Philadelphia Medical Times, November 23, 1878.

[5] Loc. cit.

[6] Centralblatt für Chirurgie, No. 2, 1879.

[7] Hueter. Allgemeine und specielle Chirurgie. Billroth und Pitha, page 70.

[8] Loc. cit.

[9] Virchow's Archiv, xl., page 401.

[10] Loc. cit.

[11] On Pyæmia or Suppurative Fever. London, 1868.

[12] Loc. cit.

[13] Charité-Annalen, iii., page 137. Gräfe's Archiv, xxiii. 2.

[14] Archiv für pathologische Anatomie, Band ix., page 307 to 308.

[15] Waldeyer, loc. cit.

[16] Lehrbuch der pathologischen Anatomie, page 347.

[17] Heiberg. Die puerperale und pyæmische Processe. 1873.

The *blood* may be unchanged,[5] or there may be an increase in the number of the white corpuscles.[6] In a high degree of infection the white corpuscles may be very granular,[7] and bacteria are found in them.[8] In protracted cases the granular condition of the white corpuscles may be the only visible change in the blood (Birch-Hirschfeld). Laptschinsky[9] found that the red blood corpuscles did not form regular *rouleaux*, but heaps or clumps of various sizes and shapes. The single blood corpuscles often appeared swollen and a little cloudy, and their contours not as distinct as usual. Frequently, very small corpuscles, one third the normal size, were found, which were sometimes intensely colored, and sometimes very pale. Further, great irregularity in the shape has been observed. Leube[10] speaks of very numerous, small, irregularly shaped, whitish, highly refractive bodies, some of which at times moved very rapidly, and which were possibly bacteria. Bacteria have been seen by numerous observers both floating free in the serum and contained in the interior of the white corpuscles, as mentioned above.

In the *lungs* the most common change is the formation of metastatic abscesses; the lower lobe is the part usually affected, though the lower portion of the upper lobe is sometimes found to contain them. They are almost never seen in the apices.[11] They are either of the size of a bean or cherry,[12] or they are miliary. In the former case we are able to find an embolus in the pulmonary artery leading to the abscess; in the latter it is impossible to distinguish one, as the infecting substance has got into the circulation in a state of fine molecular subdivision. In the former case a combination with hæmorrhagic infarction is common. In both cases we may find bacteria within the capillaries, in the interlobular connective tissue, and in the alveoli, similar to those found at the surface of the wound and in the different secondary foci of other organs. Metastatic abscesses, both large and miliary, at first have a gray color, then they become yellow, and finally a cavity is formed with fluid purulent contents. In the periphery lobular pneumonia, due to irritation, often occurs, which sometimes terminates in softening; the abscess may thus perforate into the pleural sac or into a bronchus, both of which are rare.[1] A limited amount of œdema and injection is not uncommon. The bronchial mucous membrane is very frequently reddened, swollen, and covered with much secretion.

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[1] Heiberg. Loc. cit.

[2] Purser, British Medical Journal, August, 1877.

[3] Birch-Hirschfeld, loc. cit., and Archiv der Heilkunde, xiv., pages 193 to 241.

[4] Heiberg, loc. cit. Beckmann, Virchow's Archiv, Band xii., 1857, page 61. Purser, loc. cit.

[5] Waldeyer, loc. cit. Hueter, loc. cit. Birch-Hirschfeld, Archiv der Heilkunde, xiv., 1873, page 210.

[6] Wagner, Handbuch der allgemeine Pathologie, 1874. Birch-Hirschfeld, Archiv der Heilkunde, 1873, page 210.

[7] Birch-Hirschfeld, loc. cit.

[8] Hueter, Allgemeine Chirurgie, Cop. xvii. Birch-Hirschfeld, loc. cit. Koch, Wundinfectionskrankheiten, Leipzig, 1878.

[9] Centralblatt für den medicinischen Wissenschaften, 1874, No. 42.

[10] Loc. cit.

[11] Hueter, loc. cit.

[12] Orth, Compendium der pathologischen anatomischen Diagnostik, 1876, page 139, Herz, Ziemssen's Cyclopædia.

Changes in the *spleen* are by no means constant.[2] There may be splenic tumor, with hyperæmia and a very pulpy organ, such as is seen in septicæmia; or the consistency may be dense and the color pale. Indeed, there is sometimes an anæmic, pale yellow appearance, or a mottled look, from alternation of such pale places with hyperæmic ones. This is more especially true in protracted cases. In this hyperplastic condition the Malpighian follicles may be very ill defined; in other cases, on the contrary, they are very distinct, and evidently enlarged. On microscopic examination there is seen to be a diffuse granular cloudiness of the cells of the pulp, which may also contain micrococci, while the reticulum is found not to be increased. When metastatic abscesses are found, they are usually of the same size as those seen in the lungs, and the pus which they contain may be good, creamy, and without odor.[3] Micrococci may be observed at an early stage of the abscesses. Sometimes the spleen is found to be healthy.

Waldeyer [4] records that in twenty per cent. of his cases the *liver* was healthy. The more common changes were: (1.) Simple swelling without any degenerative processes. (2.) Simple fatty infiltration in the periphery of the acini, both diffuse and isolated. (3.) Granular and fatty degenerative cloudiness. (4.) Enlargement from retention of bile in the ducts, with or without degenerative processes. (5.) Abscesses.

Fatty infiltration in the territory of the portal vein is common to this with other diseases, and in its lighter grades is scarcely to be regarded as pathological. The most frequent change is the combination of swelling with granular cloudiness or fatty infiltration of the cells; this was observed in thirty per cent. of the cases examined. Degenerative cloudiness without swelling of the acini is very rare; it was found in only eight per cent. of the cases. Enlargement as the result of retention of bile was more common, and was always of catarrhal origin, a dense plug of mucus being detected in the intestinal portion of the ductus choledochus. Waldeyer also found at the same time with the swelling and degenerative processes a moderate increase of the connective tissue cells in the portal territory of the acini; it was never so great as to be distinguishable to the naked eye, however. Abscesses were seen in six per cent. of the cases, and as usual they were located in the right lobe. The size of the abscesses may vary from that of a pea, or even smaller, to that of a child's head (which is rare). The absence or slight amount of hæmorrhagic infarction in metastatic abscesses of the liver is very characteristic.[1] At an early stage it consists of a group of gray or grayish-yellow acini, which are not unfrequently enlarged, and whose periphery is shaded off by a yellower tint; the consistency is still normal. Gradually the acini become colored more and more yellow, their boundaries are effaced, their consistency diminishes, and a small collection of pus is formed from them; this may unite with neighboring ones, again, and form a large abscess. All stages of this development may often be seen near each other. Microscopic sections of the first stages show considerable dilatation of the hepatic capillaries, and a consequent compression of the rows of hepatic cells. The capillaries are filled with micrococci, and contain a greater or less number of white blood corpuscles, and only a few red ones. In some places capillaries are found which are full of white corpuscles, having a highly granular protoplasm, and apparently containing micrococci; and it is not improbable that the white corpuscles import the micrococci, and are destroyed by their increase.[2] During the early stages we only find isolated pus cells outside the vessels; later, they increase in number, at first in the periphery of the acini, gradually extending inwards from the portal branches, and compressing the hepatic cells more and more, till at last they become completely atrophied. If suppuration is just beginning, we observe a large collection of round cells mixed with detritus, and here and there heaps of micrococci, but the process here has advanced so far as to render it impossible to follow the successive steps.

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[1] Birch-Hirschfeld, loc. cit.

[2] Waldeyer, loc. cit. Billroth, Archiv für klinische Chirurgie. Birch-Hirschfeld, loc. cit.

[3] Hueter, loc. cit.

[4] Loc. cit.

The changes in the *intestinal tract* are few. Hueter (loc. cit.) has observed stomatitis pseudo-membranacea on the tongue, in the whole cavity of the mouth, in the pharynx, and in the œsophagus, extending as far as the cardia in protracted cases of pyæmia. Swelling and cloudiness of the gastric and intestinal mucous membranes are not infrequent. Billroth[3] has found moderate swelling of the solitary follicles and Peyer's patches, but rarely accompanied by hyperæmia. Waldeyer (loc. cit.) saw the mucous membrane in the pyloric portion of the stomach often considerably swollen and cloudy, with extension of the same change into the duodenum and upper part of the jejunum; the Brunner's glands of the duodenum swollen to the size of millet seeds, yellowish and cloudy; the entire mucous membrane of the stomach and intestine succulent, not rarely œdematous, and usually without ecchymoses or marked hyperæmia, even after profuse diarrhœa. He observed diphtheritic inflammation in the large intestine but once.

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[1] Hueter, loc. cit.

[2] Birch-Hirschfeld, Koch, loc. cit.

[3] Archiv für Chirurgie, ii., pages 325–511.

Waldeyer[1] found that in the *lymph apparatus of the intestine and mesentery* the gross and microscopic appearances were those of a simple, ordinarily dense hyperplasia, sometimes with localized fatty degeneration marked by circumscribed yellowish spots on section of the glands. The mesenteric glands in the ileo-cæcal angle are distinguished from the others by their size. It is but seldom that they appear pulpy or juicy; in most cases they are dense, smooth on section, and have no points springing forth. In connection with this there is often a swelling of the lymphatic intestinal follicles, especially about the ileo-cæcal valve, not unfrequently accompanied by small ecchymoses.

Metastatic abscesses have been found in the *pancreas*, though rarely. (Birch-Hirschfeld.)

By far the most frequent change in the *kidneys* is a more or less considerable swelling, with great cloudiness and moderate fatty degeneration of the portions of convoluted tubules between the glomeruli and the looped tubules of Henle.[2] Eighty per cent. of the cases examined by Waldeyer gave this result. Much more infrequent are simple cloudiness without swelling, simple hyperæmia, and the normal appearance. The density of the kidneys is very variable; sometimes soon after death they are quite flabby and easily broken down, other evidences of cadaveric change being absent: sometimes they are decidedly firm and solid. The cloudiness is mostly of a grayish-yellow or bright yellow color, the tinge changing naturally very much with the amount of blood. Often when there is much swelling and cloudiness small ecchymoses and hæmorrhages into the urinary tubules are observed. Both kidneys are alike affected, and some degree of change is never absent when there is a considerable affection in other organs. The alterations correspond mostly with changes in the liver. Metastatic abscesses occur chiefly in the cortex (Birch-Hirschfeld), for the reason that the particles which excite the inflammation have got into the renal circulation in a very finely divided state, and therefore first become wedged in the capillaries of the cortex, or perhaps in the Malpighian bodies. If the particles, on the other hand, are larger, — for example, fragments of thrombi, — the abscesses are located between the pyramids corresponding to the distribution of the larger branches of the renal artery. In cases of the sort first described, the cortex is often interspersed with an enormous number of abscesses, which, on stripping off the capsule, appear on the surface of the kidney as round gray or yellow spots, often scarcely as large as the head of a pin, surrounded by an areola of injected vessels. If the process is not too old, especially in the smallest gray foci which are still firm, we may see in the centre of the thick purulent infiltration a vessel plugged with bacteria. Later, when the spot has softened, it is no longer possible to find the parasites. Confluence of these small points forming large abscesses is rare, because the life of the patient is not sufficiently prolonged. The large metastatic abscesses in the pyramidal portion usually show the same striped form as that seen in interstitial purulent nephritis.[1]

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[1] Virchow's Archiv, xl., page 405.

[2] Waldeyer, loc. cit.

The *uterus* is unchanged, except in those cases where it forms the starting-point of the disease. This usually occurs as a sequel to the puerperal process, and we find either a metrophlebitis or a metrolymphangitis. In the former case the metritis takes its point of departure from the location of the placenta, causing an ichorous decomposition of the thrombi in the placental veins; these thrombi may increase from here to the veins of the uterine wall, the plexus pampiniformis and the spermatic veins. As these thrombi undergo the same degeneration, they may be swept forth by the circulation and plug vessels in distant organs, giving rise to metastatic abscesses, just as in ordinary wounds. In the latter case the inner surface of the womb is covered with a foul-smelling, brownish slime ; or, when this has been cast off, we find an extensive yellow layer consisting mostly of pus cells. In the cervical portion we see deep ulcers and fissures covered with discolored sloughs, and may often trace the advance of the inflammation into the deeper portions. Ordinarily the inflammation tends to spread in the intermuscular tissue, evidently following the lymphatics. The larger lymphatics appear as yellow stripes or round vessels, according to the direction of the section; their contents are purulent. The pus is not always confined to the interior of the lymphatics; a purulent infiltration may be found in the neighborhood, also, and a microscopic examination shows that there is an extensive infiltration of the intermuscular tissue by pus cells, and fine granular elements. The muscle cells are at the same time swollen and filled with dark granules. The inflammation is continuous from the uterine wall over into the pelvic connective tissue, and the lymphatics may be traced into the broad ligaments over the pelvis, or into the abdominal wall. The inflammation invades the peritonæum very early, and is seen at the sides of the uterus first. (Birch-Hirschfeld.)

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[1] Abscess does not always follow when bacteria get into the renal vessels with the blood. They have sometimes been found in cases where we must assume that the parasites came from the blood, and yet where no metastatic renal abscesses were present. Orth, in Virchow's Archiv, lix., called attention to the fact that in many cases of pyæmia, where there were no renal abscesses, fine yellow lines were found in the points of the pyramids, which a microscopic examination proved were straight urinary tubules filled with micrococci.

Acute purulent myositis is of frequent occurrence. At first, an inflammatory œdema is found in the loose intermuscular connective tissue ; the spaces between the muscles appear gray, then become brawny, and finally yellowish and purulent. In most cases of phlegmon the inflammation is confined to the intermuscular connective tissue, the perimysium appearing to afford a certain protection against the advance of the inflammation, so that the muscle itself suffers only through injury to its nutrition. For a time, on cross section, the muscle is found to be divided up by yellow lines or bands of purulent infiltrated connective tissue. Later, the muscle is also changed : it becomes softer, paler, and more brittle ; cloudy swelling and fatty degeneration occur ; sometimes also a more or less extensive waxy degeneration ; while the connective tissue of the muscle is thickly infiltrated with pus cells. It frequently happens that the inflammation does not invade the muscle *in continuo* from the infected spot, but that the myositis occurs in a remote place. This was very beautifully illustrated in a case at the City Hospital recently, the source of infection being the rectum, and the myositis appearing in the right rectus abdominis.

The *peritonitis* of pyæmia is usually of puerperal origin.[1]

When the *joints* are implicated, we find in some cases merely an increased amount of synovia ; in other cases the contents are purulent. Sometimes, when pus is present, the synovial membrane and cartilage are uninjured ; at other times there is complete disorganization, and the bones forming the joint are exposed and at times necrotic.[2] The inflammation is usually confined to the synovial membrane ;[3] it is somewhat thickened and reddened, and the cartilage underneath may remain either unchanged, or become a little cloudy.[4]

A comparison of pyæmic pus with healthy pus[5] shows that the corpuscles of the former are of very variable size ; their contour has lost sharpness and regularity ; they often appear prickly or gnawed. Their protoplasm is at the same time darker, gray-blackish, and appears more coarsely granular than the cells of good pus. This granulation is finer than that caused by fat granules, and further may be readily distinguished from it chemically A further difference consists in the considerable formation of vacuoles, so that only a small ring of protoplasm is left in many cells. Birch-Hirschfeld considers that the granulation comes chiefly from the penetration of bacteria into the protoplasm, because, after addition of strong acetic acid and destruction of the cells, the granules insoluble in ether and caustic potash, bacteria, are strikingly more numerous in the serum. This pus is said to have a peculiar odor, different from that of decomposition.

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[1] Bauer, Ziemssen's Cyclopædia.

[2] Bryant's Surgery.

[3] Holmes, System of Surgery.

[4] Hueter, loc. cit.

[5] Birch-Hirschfeld, Archiv für Heilkunde, 1873, xiv., page 193.

NOTES ON THE SUMMER CLIMATE OF THE WHITE MOUNTAIN VILLAGE OF BETHLEHEM.

BY W. H. GEDDINGS, M. D.

ALTHOUGH carried to a greater excess by our American people than by any other, the custom of migrating during the summer from the cities to the mountains and to the sea-shore has existed for centuries among the civilized nations of Europe. It was at Stabiæ that the illustrious Galen, in the latter part of the second century, established the first sanitarium of which we have any record for the treatment of pulmonary phthisis; and although, owing to the many modifications our ideas have since undergone in regard to the treatment of that disease, few cases are now sent there, the Stabiæ of the ancients, under the more familiar name of Castellamare, still continues to attract hundreds of visitors, who, amid the most charming surroundings, enjoy the same delicious sea-breezes that over sixteen hundred years ago served to give renewed health and vigor to the enfeebled constitutions of the Roman aristocracy.

The introduction of steam as a motor power, by facilitating rapid intercommunication, has caused people to congregate in certain centres, and thus has given a tremendous impetus to the growth of cities. This unnatural massing together of individuals, with the incessant overstrain to which both mind and body are subjected, begets a train of evils, the remedies for which are rest and pure air. If this was necessary to the old Romans, whose life was one of dignified leisure, how much the more so is it to the energetic business man of the nineteenth century, who begrudges the fifteen or twenty minutes devoted to the bolting of his midday meal. What was formerly a luxury for the rich has now become a necessity for all, and it is with unfeigned pleasure that we from time to time note an effort on the part even of our charitable institutions to provide for the health and well-being of a portion of their inmates by sending them for a few weeks into the country. A noble work of this kind, and one well worthy of imitation and generous support, is the Floating Hospital of St. John's Guild, which every summer gives to thousands of poor children an opportunity for enjoying, if only for a brief period, the beneficial effects of sea-air. Another example of what may be accomplished with limited means is afforded by the annual excursions of the American Institute, by means of which our hard-worked and poorly paid teachers are provided, at a moderate cost, with a couple of weeks' recreation in some section of country where, amid the beauties of nature, they may for a brief while enjoy the luxury of breathing in the fresh, pure air. Last year they selected the White Mountains, and, according to *The Echo*, a sprightly paper devoted to the interests of that section, no less than five thousand persons connected with the Institute availed themselves of its privileges. The great question of the season, and one which is now recurring to the minds of thousands, is where to spend the summer, whether in the mountains or on the sea-shore. In regard to the choice of a locality, although by no means simply a matter of taste, the selection of a sea-shore resort is beset with but few difficulties compared with those which we encounter when we find it advisable to choose for our patients a summer home in the mountains. The frequent occurrence of typhoid fever and other diseases necessitates careful inquiry as to the nature and efficiency of the drainage. The location of the place, whether on the summit of a hill, on its brow, or in a valley, the exposure of the houses occupied by visitors, and the quality of the food provided, are all points not less important than the character of the climate.

The writer proposes, in the following pages, to furnish some information upon these points in regard to the White Mountain village of Bethlehem; not because he considers that point superior to the hundred and one mountain resorts now presenting their claims for patronage, but because he has had some opportunity of studying its topography and climate.

Bethlehem corresponds to a class of resorts in Southern Germany, particularly in the Austrian Alps, to which the appropriate name of "Sommer Frischen" has been applied, and of which the lovely village of Aussee, in Styria, is a fitting example. They are usually of moderate elevation, the air is cool and refreshing, and not infrequently baths and mineral springs are added to their climatic attractions.

Situated at an elevation of sixteen hundred and fifty feet above the sea, on a sort of table-land, with mountains in the rear, and overlooking the valley of the Ammonoosuc, two hundred and sixty-three feet below, the village of Bethlehem commands one of the most extended and varied views to be met with in the White Mountain district. To the north may be seen a succession of hills, with the Green Mountains of Vermont in the distance, while to the eastward there is a fine view of Mount Washington and his lofty compeers. The village consists almost exclusively of a long drawn out, smooth, and well-kept street, upon which are located the hotels and boarding-houses, which, with a few stores, constitute the town. This street is provided with a plank walk, extending from the Maplewood Hotel to the Alpine House, affording a magnificent promenade at least two miles in length. Arrangements have been made to water this street, thus doing away with the dust, which was formerly so great an annoyance. The houses are all of wood, and, being designed only for summer use, are lightly built. The chief buildings are of course the hotels; and of these there are two, the Maplewood and Sinclair houses, capable of accommodating between them some seven or eight hundred guests. Both of these hotels provide an excellent and abundant table, a matter of considerable importance to one's comfort and well-being, when the appetite is rendered all but ravenous by the stimulating air of the mountains. The system of drainage is most excellent, and the fact that not a single case of typhoid fever has occurred at either house since its opening affords ample proof of its efficacy. The pipes, which are all properly trapped, empty into large cement mains, by means of which the sewage is conveyed down the side of the hill into the Ammonoosuc River. The fall, of over two hundred feet, is of itself amply sufficient to secure thorough drainage; but this is made doubly sure by flushing the main pipes with water from the mountain springs and streams above the town. The drinking-water, which is as clear as crystal, and so cool that the addition of ice is quite unnecessary, is conveyed to the town from the neighboring hills by means of a system of pipes. The soil is rough and rocky, and where unimproved is covered with projecting bowlders. It is remarkably dry, the situation of the town on the side of the hills admitting of such rapid drainage that mud is a rare sight.

Temperature. The air of Bethlehem during the summer season is cool and refreshing. In the absence of any more extended series of meteorological observations, I can only give the results of a single season, extending from July 1 to September 8, 1878:—

The mean temperature of July was 70.39° F., that of August, 67.51° F., and for the whole period from July 1st to September 8th, 68.78° F. It would be difficult to imagine a more agreeable summer temperature than this, or one better suited for the class of invalids which should be sent to Bethlehem.[1]

I have compiled the following table from several volumes of the Annual Report of the United States Signal Service, for the purpose of demonstrating that the air of Bethlehem during the summer season is cooler than that of the principal summer resorts of the United States:—

Mean temperature of	Bethlehem	68.95° F.
" " "	Cape May	72.43° F.
" " "	Atlantic City	71.89° F.
" " "	Long Branch	71.32° F.
" " "	Newport	71.95° F.
" " "	Denver	72.96° F.
" " "	Colorado Springs	71.75° F.

The average morning temperature at seven A. M. was 65° to 69° F., at two P. M. 75.07° F., and at nine P. M., 66.35° F., thus giving a moderate diurnal range of 9.38° F., a degree of equability rarely met with in mountainous districts; the absolute range for these months at Denver, Colorado, as recorded by self-registering instruments, being 30.37° F., or three times as great as at Bethlehem. Making due allowance for the fact that the Bethlehem observations do not give the absolute range, but that of the observations taken at seven A. M., two and nine P. M., we may safely state that the daily range is at least twice as great at Denver as at Bethlehem. The highest temperature observed in July was 90° F. on the 2d, and the lowest 55° F. on the evening of the 22d, showing a monthly range of 35° F. for that month. In August the highest observation was 80° F., the lowest 54° F., the range for the month being only 26° F. Rain fell on seven days in the month of July, and on thirteen in August; but it should be stated that on many of these days it was in the form of passing showers of very short duration. The amount of rainfall was not measured.

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[1] It should be remembered that these figures refer to the summer of 1878, during which an unusually high temperature prevailed over the United States.

Owing to the absence of proper instruments, no hygrometric observations were taken, but, judging from popular signs alone, I should class the climate of Bethlehem as moderately dry. Severe storms occur occasionally, and high winds are not infrequent. Bethlehem, being located west of high ranges of mountains, is well protected against easterly winds, as is evident from the following figures, giving the direction of the wind during the months of July and August, 1878: —

S. W.	67	N. E.	7
W.	62	N.	4
S.	20	S. E.	3
N. W.	19	E.	3
	168		17

Classified according to their physiological effects, the first column contains those winds which may be regarded as conducive to health and comfort; while those of the second are usually looked upon as potent factors in causing disease, or in aggravating the sufferings attendant upon preëxisting chronic affections. It appears from the above figures that the favorable winds at Bethlehem preponderate over the unfavorable in the proportion of ten to one. The air of a place should not be too still, a certain amount of movement adding to its tonic effects and removing from it noxious gases, miasmatic and other impurities, which accumulate whenever its free circulation is interfered with. Easterly winds are undesirable, on account of the increased cloudiness and rain with which, in the eastern portion of our continent, they are usually associated.

In summing up the results of the imperfect observations I have been able to present, it will be found that the summer climate of Bethlehem is cool, and consequently tonic in its character, liable, like all mountain climates, to sudden changes; but that for all this the daily range of temperature is remarkably small, that it is moderately dry, and that the prevailing winds are of a pleasant character. People are usually sent into the country in order that they may pass the greater part of their time in the open air, and in selecting a health resort for invalids the preference will naturally be given, other advantages being equal, to the place in which the climate permits them to remain the greatest part of the day out-of-doors. With a view to affording information on this point, I have prepared the following table, which shows the proportion of the day that the invalid was able to be in the open air during July and August, 1878 : —

	Whole Days.	Three-quarter Days.	Half-Days.	Quarter Days.	No part of the Day.
July	22	5	1	0	3
August	25	2	4	0	0

In other words, out of sixty-two days an invalid could with safety have remained out throughout the whole of forty-seven, and a portion of twelve ; while out of the whole number of days there were only three on which the weather was of such a nature as to necessitate his confinement within doors during the whole day. In preparing this table, in addition to rain, very cool and windy weather was taken into consideration. The effects of the climate upon invalids appeared, as far as my limited experience permitted me to judge, most excellent ; but as no journal was kept, it is impossible to give any accurate idea of the number benefited. Among seventy-five cases that came under my observation not one died at Bethlehem ; and in only two instances, one a lady with colliquative diarrhœa, and the other a case of hepatic abscess emptying into a bronchus, was it necessary to send the patient home as hopeless, or as unfitted for the climate. Four cases, two of consumption, and one each of asthma and rheumatism, neither gained nor lost. Two cases of consumption improved rapidly : one patient gained ten pounds ; and in case of the other, in whom the disease was in its incipient stage, the physical signs detected by his physician had all but disappeared when I last examined him. It is but fair to state, however, that many of the above seventy-five cases were not of a serious character.

The exemption from hay fever enjoyed by Bethlehem is so well known as to render a notice of it in this paper superfluous. It was only occasionally and at long intervals that I heard of an attack of this affection occurring in the village, and in every case into which I inquired the patient had brought it on by visiting some place in the neighborhood. I also heard that cases had been known to occur in the village itself, but every one of them could be traced to carelessness in allowing the *Ambrosia artemisiæfolia*, to which the hay fever is by many attributed, to grow on the premises, and promptly ceased with the removal of the weed.

Indications. In general terms, Bethlehem may be considered as suited for all cases requiring a cool, stimulating mountain air. For example : (1.) *Consumption* in its earlier stages, before the patient has become too anæmic to stand the cool air of the mountains. Tendency to hæmoptysis affords, in my opinion, no contra-indication. The altitude of Bethlehem corresponds with that of the famous sanitarium at Goerbersdorf, in Silesia, where Brehmer lost only four patients from hæmorrhage out of the three thousand cases of phthisis treated there.[1] (2.) *Catarrhal affections of the air-passages* are benefited, the secretions being greatly diminished. (3.) *Emphysema* and *asthma.* (4.) *Hay fever*, as above mentioned. (5.) *Dyspepsia.* As would naturally be expected, cases of chronic gastric catarrh improve rapidly when transferred to the invigorating atmosphere of the mountains. (6.) *Chlorosis* and other anæmic affections. "The powerful and often prompt effect of pure country air upon sick and well, its tonic influence upon the feelings and nutrition, *its effect upon hæmatosis*, which is more surely proven than even that of iron, are all facts that require no demonstration, and appertain to the experience of every one."[2] (7.) *Diseases of females* requiring a tonic climate will do well at Bethlehem; but cases with procidentia and pregnant women should be warned against the jolting of the country wagons usually employed in this section when making excursions to places in the neighborhood. (8.) *Convalescents from typhoid fever* and other exhausting diseases, as well as those whose recovery from pneumonia and pleuritis has been slow and incomplete. "The convalescence from acute diseases, notably of the respiratory organs, but also of the circulatory and digestive apparatus, is retarded from week to week, until the patient has an opportunity of enjoying to its full extent the fresh air (of the country), when all at once the appetite returns, the secretions become regular, and the patient feels that he is well."[3] (9.) *Nervous exhaustion and diseases caused by overwork and confinement.* (10.) *Scrofulous and rachitic affections of childhood.* (11.) *Intestinal catarrhs* prevailing among children during the summer months. If asked what class of visitors derives the greatest benefit from a residence in the mountains, I should without hesitation reply, The children. Among the scores of little ones who spent last summer at Bethlehem, there was not a single case of serious illness.

The foregoing sketch of the climate of Bethlehem is necessarily imperfect, but the writer has thought that it would be better to present it now than to wait until more extended meteorological observations and a more intimate acquaintance with its climatic peculiarities should enable him to do greater justice to the subject. It is hoped, too, that other physicians located at our different summer resorts may institute meteorological observations of their own, and thus add to the limited knowledge we possess in regard to the climatic character of the places to which the profession are invited to send their patients. The subject is still in its infancy, and in our country the field is so extensive that it will require the labor of many observers to construct anything like a systematic work; meanwhile, contributions like the present must be regarded as so much rough but useful material, out of which some one of our successors will be able to elaborate a complete work on American medical climatology.

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[1] The consideration of altitude in connection with the treatment of consumption at Bethlehem is omitted for want of space.

[2] Braun's "Balneo therapie."

[3] Reimer, Winter Curorte, 1869, page 20.

BETHLEHEM, N. H., *July* 1, 1879.

PROCEEDINGS OF THE SUFFOLK DISTRICT MEDICAL SOCIETY.

T. M. ROTCH, M. D., SECRETARY.

FEBRUARY 22, 1879. Fifty-six members were present, the president, DR. C. D. HOMANS, in the chair.

Alcohol. — MISS LOUISE S. BAKER made some remarks on the use of alcohol by physicians as leading in certain cases to intemperance. — DR. H. I. BOWDITCH remarked that the whole subject of intemperance had already been brought before the notice of the profession, and that great caution should be used where there is a hereditary predisposition to intemperance; also, in prescribing whisky or liquors in chronic cases which do not remain under observation; but it seemed to him absurd to cut off any remedy entirely because in some instances it did harm. In support of this view, he cited the case of a patient sixty years of age, who was seized with what at first appeared to be insanity, but which eventually proved to be pneumonia, and whose life was apparently saved by taking champagne in large amounts. — DR. JAMES AYER said that the question had been asked him as to how many persons he had made intemperate; he had answered that he knew of no case, and that he thought that the profession were honest enough to refuse alcoholic stimulants where it is asked for and not needed. He felt sure that life is often saved by it. He also remarked that he was very much pleased with the address, but that we should not be blamed where we are not at fault.

Thrombosis. — DR. F. H. DAVENPORT read a paper on A Case of Thrombosis following the Operation for Laceration of the Cervix. The patient had had symptoms of uterine trouble since the birth of her first child, six years previously. She was found to have a laceration of the cervix of the second degree, and was operated on at the Free Hospital for Women. The operation was successful, and she left the hospital in three weeks. A few days later thrombosis of the left external saphenous vein occurred, accompanied by pain, swelling, numbness, and some fever. In a few days most of the symptoms were relieved, but the œdema persisted for several weeks. Dr. Davenport spoke of the safety of the operation, as shown by the experience of Dr. Emmet, its originator, who in more than two hundred cases has had but one death and one case of pelvic cellulitis, and the statistics of the New York State Woman's Hospital, which show equally good results. Dr. Davenport also referred to the tendency to operate in cases where it is not necessary, and without due precautions, and recommended care in the selection of cases and in avoiding complications. Though this is the first case on record of this trouble following the operation, analogous cases are not rare. They were considered by Dr. Davenport to be primarily cases of thrombosis, the result of two factors: first, a peculiar condition of the blood, by which it is liable to coagulate; and, secondly, a direct extension of the thrombosis from some point of absorption. Phlebitis, if present in such cases, is secondary. — DR. BAKER remarked that the danger may be greater than we imagine, and that to insure success we must take precautions, as in other operations.

Dilated Bronchi. — DR. ELLIS reported two cases of dilated bronchi: —

CASE I. *Chronic Bronchitis with Dilatatation of the Bronchi.* — Although the duration of this case was eight years, it was under observation at certain times only, when acute exacerbations called for relief. The records kept at these times have been condensed, in order to render the points clearer and avoid tedious details.

The patient was a married woman, forty years of age. Her mother was said to have died of consumption, but no other member of the patient's family had shown any sign of that disease. With the exception of a cough, which, though not very severe, had excited anxiety, she had enjoyed average health.

On January 14, 1871, though not feeling well, she went out, but was soon obliged to return, with headache, chills, and fever, followed by pain in all parts of the body, loss of appetite, and nausea. The cough became troublesome, and was accompanied by the expectoration of grayish viscid mucus. No apparent dyspnœa, and no pain when seen on the third day. Pulse 108. For about a week the cough was very severe; for another week it was somewhat mitigated; then began to improve decidedly; but at the end of a month, when convalescence was sufficiently established to render daily visits unnecessary, it was still quite marked. The expectoration was abundant, muco-purulent, and at one time, but twelve days after the beginning of the attack, contained a portion which was slightly rusty in color, though this was not mentioned afterwards. At the end of a fortnight, when the cough began to abate, the expectoration diminished, in a few days was less purulent, and finally became quite moderate. The respiration was at first not labored, about 28; at the end of a fortnight rose to 40 or more; then gradually declined, until there was no apparent dyspnœa in the middle of the third week.

When first seen, there were no positive morbid physical signs, but subcrepitant râles soon made their appearance in the lower half of both backs, and were very marked for ten or twelve days, when they diminished, but never disappeared, being heard at the bottom of the back at the last visit. These were accompanied, in the lower half of the left side, by bronchial respiration and bronchophony, which increased in intensity for two or three days, when dullness became decided. The bronchial respiration and bronchophony began to diminish in about a week after they appeared, and in twelve days more were absent.

The pulse was about 100 for the first few days, gradually rose as the disease in the lung developed, and at one time was 136; but it rarely rose above 120, and so continued till the twentieth day, when it fell again to 100, and remained there as long as the patient was under observation. The temperature at first was 100° F., reached 103° F. or 104° F. when the disease was at its height, afterwards fell, and on the twentieth day was normal, though there was a slight rise once afterwards. The nausea soon ceased, and as the thoracic symptoms declined the appetite improved. The bowels were frequently constipated, owing perhaps to the use of opiates. In the early part of the illness there was much sleeplessness, but this became less and less troublesome, as the disease declined. Though there was considerable loss of flesh, the strength was not so much affected as would be expected under the circumstances, she having walked down-stairs at the end of the first week, and being able to sit up at times afterwards. After the violence of the disease had passed she gained slowly, but continued feeble, and when seen last the subcrepitant râles were very marked.

During the succeeding two years, a part of the time was passed in the south of Europe and in a voyage to the Azores. The cough persisted, and she had the appearance of being affected with serious disease, but there was no opportunity for ascertaining the real condition of the lungs.

She was again seen on March 30, 1874, having waked in the morning, five days before, with headache and chills, followed by fever. She went down-stairs to breakfast, however, but was soon attacked with severe pain in the right mammary region, which gradually diminished, and was hardly felt at the time of the visit. Her appearance was not particularly changed. An examination of the chest showed subcrepitant râles in the right side posteriorly. This attack was of but short duration, and was probably prolonged by a sore throat.

In March, 1876, there was another acute exacerbation, of short duration, in which the same physical signs were found.

Then followed another long period, characterized by urgent cough, abundant purulent expectoration, and constantly increasing dyspnœa; but the patient was up, and frequently rode out. The emaciation became very marked, and the strength gradually failed, until she was hardly able to walk up one flight of stairs.

She was seen for the last time on November 14, 1878, when she spoke of taking cold with every change of the weather. The last attack had been, as before, ushered in by a chill, and there had been considerable fever. Cough very troublesome. Expectoration abundant and purulent. Pulse 132. The right side of the chest was tender on percussion. Resonance good everywhere. Abundant subcrepitant râles in the lower half of both lungs, posteriorly and laterally.

Though very weak, she rode ten miles soon after this last visit, but was unable to go up-stairs without help, and died of exhaustion, with but little warning, in the latter part of December, 1878.

If we now review the whole case, we have, first, an attack of acute inflammation, with marked signs of some thoracic affection. The earliest and most persistent signs indicated the smaller bronchi as their seat. To these were soon added the evidences of consolidation. The rapidity of development was such as might be seen in a case of croupous pneumonia, and the single mass of rusty expectoration favored this interpretation; but the subcrepitant râles, which were the first to appear, were such as often precede the consolidation of catarrhal pneumonia, and it was feared that this was present until the decline and disappearance of the signs of consolidation showed a more acute process. But the original subcrepitant râles persisted, and, in consequence of this, it was always suspected that a new consolidation of the pulmonary tissue would eventually follow, and particularly as the constitutional disturbance was not as great as in ordinary cases of frank pneumonia. Then came long periods when nothing was known of the condition of the lung, though the persistent cough and expectoration indicated a continuation of the catarrhal process at least, and when the occasional opportunities for examination occurred such a condition was found. But it was not known whether these physical signs were the result of fresh disease, or the persistence and aggravation of the old. The results warrant us in believing the latter. The rational signs were those of catarrhal pneumonia, though there was less fever than is common in severe cases of the kind. The fact that the anticipated consolidation did not occur makes this a very exceptional case, for such a persistence of subcrepitant râles without some farther change is the last thing to be expected. Notwithstanding the rarity of such cases, the evidence seemed sufficient to justify the diagnosis of chronic bronchitis, and probably dilatation of the bronchi.

The autopsy was necessarily hurried and partial, the thoracic organs alone being examined. Emaciation extreme. The lungs were free. The bronchi contained a large amount of purulent mucus, and were uniformly, but not excessively, dilated. The mucous membrane was of a deep red color, and appeared thicker than normal. The intervening pulmonary tissue appeared healthy to the naked eye. Heart normal.

CASE II. *Dilatation of the Bronchi of the Right Lung, with increased Density of the Pulmonary Tissue.* — The patient was an Irishman, with an excellent family history. Twenty-two years before he applied for advice (December 3, 1878), he was kicked down-stairs, and struck upon the right side of the chest, breaking, as was said, two ribs. This injury was followed by a severe illness, first called lung fever, and afterwards consumption, in which there was severe cough and general prostration. With this he lay in bed three years, and then got about very gradually, dyspnœa persisting to such an extent that he could not walk up-stairs after he was able to go down.

Two years after leaving his bed he was able to work, and led a very active life, though never free from cough and abundant expectoration, thin, stringy, and light colored when he felt well, but at other times yellowish-white. Dyspnœa had also been a constant symptom, and had increased very much within the last three months. With these exceptions he felt perfectly well, and had driven a grocery wagon for fifteen years, until his feet began to swell, two weeks before he was seen. Never any pain. For three months he had had, on exertion, palpitation of the heart, first noticed after much anxiety and running about during the severe illness of his little boy. With this there was dizziness. Cough most troublesome in the morning and at night. Expectoration abundant and yellow. No blood. Appetite very good, but the ingestion of food was followed by flatulence and palpitation, and late in the fall he could not take solid food or even milk without so much distress as to lead him to seek relief by vomiting. Bowels costive, regulated by a pill every night. No pain. No chills or fever. No night sweats, though he had such two years before. Had lost neither flesh nor strength. Pulse 108. Fingers and toes clubbed in a most striking manner. Lips and face cyanotic. Marked œdema of the feet and legs. Abdomen swollen. The heart was beating tumultuously to the right of the sternum, but no souffle could be heard. The right side of the chest looked smaller than the left, and was dull throughout on percussion. Over this whole region there were subcrepitant and coarse râles, with which were mingled some of a sibilant and sonorous character. On the left side the respiration was exaggerated, and at the base, posteriorly, were some subcrepitant râles. No increased resonance of voice.

Urine scanty, acid; urea slightly diminished; considerable albumen; a few hyaline and finely granular casts.

We had here the most conclusive evidence of thoracic trouble, of which the dyspnœa was the most prominent symptom at the time the patient was seen. The cough and expectoration during so long a period would certainly indicate some pulmonary disease which might be the cause of the dyspnœa. But if there had been catarrhal pneumonia sufficiently extensive to cause such difficulty of breathing, the general health must have suffered more. This point was strengthened by the appearance of the patient, whose face was cyanotic, when he called at my office and declared himself able to work if he could obtain relief from his dyspnœa. We had therefore to think of chronic bronchitis with emphysema, or perhaps a combination of these with cardiac disease. At the same time the very severe illness which formed the initial stage of the affection must have been something more than an ordinary bronchial attack; perhaps a pleurisy or pneumonia. But if either of these were the cause of his long subsequent illness, the lung must have undergone some singular change of structure to account for the symptoms. The difficulties of interpreting the rational signs were not diminished by an examination of the chest. The right side of the chest was contracted, and the sounds of the heart were most distinct to the right of the sternum. With such a conformation of the chest, we might reasonably suppose that the original disease had been followed by such a diminution of the size of the lung as to draw the heart to the right. The examination of the heart failed to show any valvular disease, so that if the cyanosis were connected with the heart itself, the displacement of the organ could alone explain it. But it was not improbable that the condition of the lung might be such as to oppose the escape of blood from the heart. The dullness on percussion was so marked as at once to exclude bronchitis or emphysema as the sole causes of cough, expectoration, and dyspnœa. The abundant moist râles, however, showed that the lung was beneath the ear, and these râles were of such a character that they might have been formed in small cavities or in the bronchi; but if these small cavities were the result of the destruction of the pulmonary tissue, as in catarrhal pneumonia, the constitutional effects must have been very different. We were justified, therefore, in believing that the fluid was in the bronchi themselves. The dullness, taken in connection with the contraction of the chest, suggested an old pleurisy. But if the suspicion that the air-passages were dilated was well founded, this dullness was well explained by the supposition of the existence of that dense condition of the lung found at times with dilated bronchi.

Bearing all these facts in mind, the patient was told that he was suffering from dilatation of the air-passages, and that the difficulty of breathing was probably owing to the obstruction to the flow of blood offered by the diseased lung. Although it was possible that there might be some renal disease, judging from the character of the urine, the abnormal features of the latter were explained sufficiently well by congestion.

After expressing an opinion about the case, it was ascertained that the patient had been for two years under the care of Dr. Doe, to whom I am indebted for some of the facts in the early history, and who also gave the following account of the condition two years ago: "He was suffering severely from dyspnœa and cough. The expectoration was profuse, and raised without difficulty. Marked venous congestion of the face. No pain. He attributed the attack to a cold contracted a few days before. On examination of the chest, loud, moist, bubbling râles were heard throughout the right lung; over the left front and back there were subcrepitant râles in abundance. When seen at his house, two days later, he was unable to leave his bed, where he remained in a sitting posture, owing to the excessive dyspnœa, relief being obtained for a short time only by vomiting. The expectoration continued profuse. Feet and legs œdematous. Urine normal. The râles throughout both chests were so abundant as to obscure the respiratory sound. Heart's action labored, but no disease of the valves was detected.

"Under the use of counter-irritants and emetics, he gradually recovered, and went to work in three weeks.

"After this he continued well, though the cough persisted until the exertion already mentioned, in August, 1878, when the palpitation began. The quantity of urine at this time was small, but its character was normal."

Very soon after visiting me he was confined to his bed by weakness, and was under the care of Dr. Doe, who found dullness over the whole right side of the chest, with the exception of a portion an inch and a half in diameter just outside of the left nipple, which was slightly tympanitic. The coarse râles persisted in the upper half of the right side, and in the left front were some of a subcrepitant character. The sounds of the heart were normal, but were heard most distinctly to the right of the sternum. The expectoration frequently amounted to two pints in twenty-four hours, and was of a creamy character. No improvement took place under treatment, and he died on Christmas Day.

Autopsy by Dr. Doe, forty-eight hours after death. The heart lay nearly in the median line; right auricle and ventricle much hypertrophied; left ventricle of the usual size; the orifice of the mitral valve admitted the tips of two fingers only, but the valve seemed pliant and apparently able to close. Both lungs were adherent to the walls of the chest, the right very firmly. Throughout the right lung the bronchi were very markedly dilated, especially in the upper two thirds, and were filled with a thick, cream-like secretion. Mucous membrane reddened and thickened. In the part corresponding to the tympanitic resonance the bronchus was so enlarged as to admit three fingers. There was slight dilatation of the bronchi of the left lung also. Many of the right bronchi showed the peculiar sickle-shaped folds so often seen in this form of disease. The intervening pulmonary tissue was more dense than usual. The stomach and kidneys appeared healthy. The liver was large and dark colored, as from congestion. The microscopic examination of the dense pulmonary tissue by Dr. E. G. Cutler showed a great increase of the connective tissue. This density of the lung was sufficient to cause obstruction of the circulation, but the narrowing of the mitral valve probably increased the difficulty.

Though described under the head of dilated bronchi, as this lesion was common to both of the cases, we do not overlook the fact that the dilatation was a consequence rather than a cause, and are therefore prepared, on comparing the symptoms, for a most striking contrast. In the first, the rational signs were those of catarrhal pneumonia; in the second those of emphysema or cardiac disease were quite as prominent. In the first, the physical signs were those of bronchitis; in the second, of catarrhal pneumonia.

They both, however, illustrate a law which should never be forgotten: *Symptoms, as such, rarely indicate special diseases, only certain morbid conditions common to many diseases; and that it is the correct appreciation of the combination of these symptoms, their proportions, and their relations to each other which is essential for diagnosis.*

Fibroid Tumor. — DR. J. H. WARREN exhibited the specimen, and made the following remarks: I wish to show you this specimen, which I removed on Wednesday last, February 19th. The patient, who was an American lady, and mother of four children, first noticed a slight tuberosity above the surrounding surface the first of last August. Some two weeks previous to my operating she called the attention of her physician to it, who thought it best to have it removed at once, owing to the rapid growth. Dr. Pitman, the attending physician, thinks that it had grown fully half an inch since he examined it, two weeks before. It developed from the anterior lip of the os uteri, and would seem to be a fibroid tumor. It is exhibited to show the rapid growth of such tumors. It was removed with the écraseur, and actual cautery was applied to control the hæmorrhage.

Lymphangitis. — DR. STEVENS made some remarks on a small sore which he had on one of his fingers, the cause of which he could not account for, and which was followed by a lymphangitis of the arm up to the shoulder.

Pneumonia with Erysipelas. — DR. H. I. BOWDITCH spoke of a case of pneumonia which had been followed by erysipelas of the face, and death.

ELLIS'S DEMONSTRATIONS OF ANATOMY.[1]

THIS work occupies rather an intermediate position between what is called a "dissector" and a text-book of anatomy, though it is more closely related to the former. There is a good deal to praise in the clearness and arrangement of the work, but nothing sufficiently distinctive to call for much notice. The book is essentially English in method, which makes it appear old-fashioned to any one familiar with the current anatomical literature of the Continent. The convolutions of the brain are treated of in detail. The author follows Turner's nomenclature. It is to be regretted that one of the many systems in use cannot be agreed on. The tabular views of the distribution of the arteries and nerves of the various parts are very useful. It is a pity that the author felt called upon to touch histological points, for they have really no place in a work of this kind, and what little we find here does not add to the value of the book.

T. D.

HEARING AND HOW TO KEEP IT.[2]

A THOROUGHLY good book, in plain, concise language, full of sound common sense and useful warnings, it is admirably adapted to diffusing a more popular knowledge of the ear, its functions and diseases, than is now generally met with. It is divided into three parts: Anatomy and Physiology; Chief Diseases and Injuries of the Ear, and the Avoidance of their Improper Treatment; General Hygiene of the Ear. What not to do in the different diseases constitutes a prominent and most useful feature of the book.

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[1] *Demonstrations of Anatomy: Being a Guide to the Knowledge of the Human Body by Dissection.* By GEORGE VENER ELLIS. From the eighth and revised English edition. Philadelphia: Henry C. Lea. 1879.

[2] *Hearing and How to Keep It.* By CHARLES H. BENNETT, M. D. American Health Primers. Philadelphia: Lindsay and Blakiston. 1879. 12mo. Pp. 150.

LUNACY REFORM.

We have until recently credited our lunacy reformers with as much honesty of purpose as could be expected where feelings of personal resentment at supposed unjust confinement have entered so largely into the movement. The ingenious misrepresentations of the half-insane have always been the basis, in part, of the ill-grounded assumptions of abuses in our asylums. But as long as their evidence could be offset by that of a different character, and the whole subjected to impartial consideration, no great harm could result from a healthy, legitimate public discussion of the matter. In spite of the meeting held in this city last winter, some good legislation was effected. There was indicated, however, a party spirit, and a striving for personal and political ends, in certain quarters, which cannot be too strongly condemned. The half-insane and inflammatory element was worked up and stimulated quite unnecessarily. Spite and prejudice against asylums and their superintendents had full sway, and got themselves into legislation in the provision that no physician connected with any hospital for the treatment of the insane shall certify in any case of insanity. But it was to an extraordinary exhibition of this spirit, and the practices to which it leads, in New York that we intended to call attention at present.

A report of the committee on public health to the New York legislature has recently been made on a petition alleging abuses in the state asylums. It was the duty of the committee to inquire whether warrantable grounds existed for ordering a detailed examination, for which purpose the superintendents of asylums, the commissioners of lunacy, and the signers of the petition were summoned. We give the following abstract from the report in the *Albany Argus*: —

"More than half the petitioners repudiate their signatures altogether. Not a baker's dozen put in an appearance. Of those who did put in appearance, not one knew anything, or pretended to know anything, of his personal knowledge. None of the complainants have ever been in all of the state asylums under their present management. Most of them had never been in any of them at any time. The principal complainant, William A. Hammond, of New York, had been in two of the asylums at intervals of eight and thirteen years; in the others never. The statements made by some of the apparent petitioners who repudiate their signatures are startling. President Barnard and Professor Draper, of New York, declare that they never signed their names, and that they were put on by fraud. Many physicians and clergymen say they were induced to sign some other petition, and that the paper on which they signed has been piratically pasted to the petition under consideration, — a petition which they never saw.

A very large mercantile firm makes a surprising statement to this effect: they recognize their signatures and that of twenty-one of their employees on a paper pasted on to the petition. They also state that that paper, containing those signatures, was a part of a testimonial of good character, which the firm and their employees had given to a departing associate. The paper with the signatures had been cut off from that testimonial and tacked on to the antiasylum petition. There are other piracies quite as flagrant as these exhibited by the report of the committee. The disclosures by the other persons repudiating their signatures are as peculiar as those already recited. Several clergymen pitifully declare that they signed the petition on the representation of others. As the petition charges gross offenses and incapacity against several gentlemen long and honorably in the service of the State, the alacrity of the clergymen to vilify public servants on 'the representation of others' is a commentary that needs no remark on such occupants of a sacred office. Other signers declare their signatures were asked for local improvements, and have been carried without their knowledge to the pending petition."

"Every one of the complaining witnesses is a self-proclaimed know-nothing on the facts of the state asylums. They swear, however, at great length to theories of treatment, and with great personal antipathy to certain superintendents of asylums. In support of their charges they bring nothing. They name no witnesses. They make no allusions to where evidence can be had. They merely antagonize one mode of treatment against another, and declare that the men who are superintendents are not entitled to the reputation which they enjoy."

The committee naturally declare the petition to be unsupported by a scintilla of evidence; "they declare the action and evidence of the few who come to the front to be an outrage on the honor of a decent and respected profession." The committee of which Senator Goodwin is chairman appear to have taken great pains in the preparation of the report. Little comment upon it is needed. The care of the insane is a question upon which too much care and thought cannot be expended, but when the spirit of reform degenerates into persecution, and calls to its aid fraudulent devices to further its ends, it is time for the medical press to enter an earnest protest against such methods of dealing with so serious a subject.

FREE QUININE.

ONE of the last acts on the last days of the extra session of Congress was the passage of what is known as the McKenzie quinine bill, which in effect exempts the importation of salts of quinine and sulphate of quinine from customs duties, and the friends of the bill are to be congratulated upon the energy with which it was carried through both houses. Much of this result is due, as stated by Senator Beck, in the United States senate, to the article by J. S. Moore, in the New York *Evening Express*, June 7, 1879, from its influence upon a house committee. This article made the statement that while quinine is charged with a duty of twenty per cent. the bark is free of duty; that the government, in 1878, got a revenue of exactly $10,171.60 from foreign quinine; and that the importation of the bark amounted, in 1878, to $1,279,946, free of duty, no less than $600,000 being paid as extra tax to quinine manufacturers.

This extra session has definitely settled a struggle of twelve years' duration in removing this tax, and, as Senator Davis, of Illinois, stated, if this Congress does nothing else than repeal the duty on quinine, it will not have been in vain that it was called together. The revenue of 1878, although amounting to only $10,171.60, was in excess of the regular income, as the yellow fever epidemic made a largely increased demand over the amount manufactured in this country.

On the other hand, there is yet more to be done, as was shown by Senator Morrill, who opposed the bill, and by the recent action of Messrs. Powers and Weightman, and Rosengarten and Sons, who, it is said, will not manufacture any more quinine, being unable to compete with the foreign market, with the duty on East India cinchona bark at ten per cent., and the tax of $1.70 per gallon on alcohol. The effect of such action on the price of quinine remains yet to be seen. Mr. Morrill predicts that in two years, or perhaps one year from now, the price of quinine will be higher than it has been before, and asks for the removal of tax upon the material, which will allow of increased competition in the manufacture. He showed the superiority of the bark from the Dutch and English colonies in the East Indies to that from South America, and called attention to the fact that while there was no duty upon the latter, the former, being shipped from Amsterdam and London, pays a duty of ten per cent. The English, moreover, allow their manufacturers to use alcohol without the payment of duties thereon. It would be interesting to learn how much of the crude material which has been so suddenly rendered unavailable is at present on hand in this country, as statistics show that about five million pounds of the bark are brought to us annually.

It would be well for us to look carefully at both sides of the question, and in case of necessity to demand further legislation, not for any repeal of the great advantage which we have apparently gained, but to give our own manufacturers the opportunity of full and free competition.

MEDICAL NOTES.

— There has been an unusually warm contest for the place left vacant in the section of hygiene and legal medicine in the Paris Medical School by the death of Professor Tardieu. M. Proust was elected to the chair.

— Professor Neubauer, one of the authors of the well-known work on urinary analysis, died June 2d at Wiesbaden.

— From English journals we learn that the rapidly developing trade for the importation of fresh meat from America is not without objectionable features. During the first week of June not less than fifty-one tons of this meat were condemned as unfit for human food. The condition of the meat was principally due to some failure in the freezing apparatus on the steamers.

— A committee has been formed in Florence for the purpose of establishing a hospital for the sick of all nations and all religions. — A remarkable improvement in the health of Professor Skoda is reported by the Vienna journals. — Professor Klebs has been appointed dean of the faculty of medicine in the University of Prague.

— At a recent meeting of the Odontological Society of Great Britain, Mr. Hepburn read a paper on the Effect of Smoking upon the Teeth. He considers the direct action of nicotine decidedly beneficial to the teeth. The alkalinity of the smoke must necessarily neutralize any acid secretion which may be present in the mouth, and the antiseptic property of the nicotine tends to arrest putrefactive changes in carious cavities. The dark deposit on the teeth of some habitual smokers he believes is largely composed of the carbon with which the tobacco smoke is impregnated. This deposit takes place precisely in those localities in which caries is apt to arise. The stain will penetrate through the minutest cracks unless careful attention be given to cleanliness. He likewise had been struck by the painless necrosis of carious teeth in smokers. This he accounts for by the narcotizing influence of nicotine. The experience of other speakers corroborated Hepburn's views. One, however, thought the frequent changes of temperature probably injurious by their tendency to crack the enamel. Another gentleman thought that smoking to the extent of affecting digestion caused recession of the gums, and otherwise injured the nutrition of the teeth.

— In the London *Lancet* we find these pertinent remarks on books in hospitals: We quite agree that a great boon will be conferred on the sick poor in hospitals if these institutions can be supplied with books, especially illustrated and entertaining volumes, which may help to divert the slowly convalescent and those suffering from injuries and diseases which incapacitate the body without impairing the power of thought from their pains and grievances. At the same time, we cannot but perceive that caution will be necessary. A *circulating* library would be in great peril of becoming a vehicle for the dissemination of disease. Especially dangerous would it be to allow books and papers which have been lying on the bed of a patient recovering from fever, erysipelas, or any one of a score of common maladies, to be used by a patient perhaps convalescent from some delicate operation, with an easily infected wound. It would be even incurring a great risk to allow children to play with picture-books which had been handled by patients suffering from scarlet fever, measles, whooping-cough, and the like. In short, the idea of a *circulating* library for the sick is misconceived. Far better would it be to provide the hospitals with a liberal supply of loosely-stitched sheets, which might be readily procured from the damaged stock of the great publishing houses, so that after these aids to recovery had served their immediate purpose they might be destroyed. We venture to hope philanthropy may take this line of enterprise, and not one calculated to constitute a new agency for the spread of disease.

NEW YORK.

— Dr. Nagle, deputy registrar of vital statistics, is about to publish his report for the year 1878, and the following information is derived from it: —

The number of births, as shown by the certificates of physicians, was 25,759, a considerable increase as compared with the number reported during the year preceding, and representing an annual birth-rate of 23.74 per 1000, the population of the city being estimated at 1,083,371. While the number of births reported, however, was 25,759, the number of deaths reported was 27,008, which apparently indicates a loss of population during the year. But the statistics of births always fall short of the truth, and it is estimated that the number which actually took place was about 38,000. The estimate as to the real number of births is made in the following manner: The records of mortality from December 31, 1870, to December 31, 1875, showed a yearly average of 8654 deaths of children under one year old, and the New York state census of 1875 showed that 27,261 native white children and 315 colored children of that age were alive in this city in that year. Assuming that all the colored children were born in the city, the number of children of that age who were alive in that year would be 27,576, and if to that number is added the average number of children who die at that age in a year, as obtained from the records of the five preceding years, the number of children born in this city in 1875 would be 36,230. This would give a rate of 34.79 births to every 1000 inhabitants of the estimated population. The state census of 1875 showed a native population of 581,374, foreign 445,258, and colored 15,254. This would give a birth-rate of 14.45 per 1000 for the native white inhabitants, 39.66 per 1000 for the foreign white, and 22.81 per 1000 for the colored.

The number of deaths during the year, as mentioned above, was 27,008, showing a death-rate of 24.90 to every 1000 of the estimated population, and an average daily mortality of 73.97. The tenement houses furnished 14,354, or 53.15 per cent. of the total number of deaths. The deaths, as usual, were more numerous during the third quarter of the year, the number being 981 greater than during any other quarter. The month of July had the highest mean temperature, 77.84° F., and also the largest number of deaths, the daily average being 99.16. In August the mean daily temperature was 74.20° F., and the average daily mortality 79.20.

Of the suicides reported, 58 were among Germans, 31 by natives of the United States, 22 by the Irish, and eight by the English population. One hundred and six individuals died after surgical operations during the year, but the vast majority of these were performed in incurable cases, with the hope of prolonging life.

— Whenever the mercury reaches an unusually high point there is always a proportional increase in the death-rate of the city. Thus, on Wednesday, July 16th, the maximum temperature was 101° F., and between noon that day and noon the day following two hundred and forty-nine certificates of death were received at the office of the Bureau of Vital Statistics. This is the largest mortality in twenty-four hours that has been reported during the present year.

— A fatal case of yellow fever has occurred in Brooklyn. The patient came from Havana on the steamer City of Merida, which reached lower quarantine on the 13th of July, and was detained four days, as is the usual custom in the yellow fever months. When she arrived there was one case of the disease on board, a waiter, who was taken off and sent to the hospital on Swinburne Island, where he afterwards died. Dr. Vanderpoel found no other sickness on board, as the man who died in Brooklyn was not taken ill until after the ship had passed quarantine. His case was not reported to the authorities until immediately before his death. A case of yellow fever has also occurred in Hoboken. The man who had it recently came on from Memphis, but the disease did not develop itself till after his arrival in the vicinity of New York.

— The oldest child of Dr. Henry D. Noyes, professor of ophthalmology in Bellevue Hospital Medical College, nine years of age, was recently drowned in the Shrewsbury River, near Monmouth Beach. While out sailing he was struck in the head and knocked overboard by the boom when the boat was tacking.

— Dr. Lewis A. Sayre, president elect of the American Medical Association, accompanied by his son, Dr. C. H. H. Sayre, sailed on the Arizona on the 22d of July, to attend the meeting of the British Medical Association at Cork, in August.

MEDICAL AND SURGICAL NOTES; UNITED STATES NAVAL HOSPITAL, CHELSEA, MASS.

BY ARTHUR C. HEFFINGER, M. D.,
Passed Assistant Surgeon United States Navy.

Sporadic Cerebro-Spinal Meningitis. — J. S., seaman, native of Germany, age twenty-four. Was admitted to the hospital with what was supposed to be febris intermittens. Examination revealed great tenderness over sacrum and lumbar region, particularly when the lumbar spinous processes were pressed upon; slight headache and general lassitude. Antiperiodic treatment was ordered. The third day after admission he had severe basilar headache and much pain and soreness throughout the entire spinal column, which was greatly increased by the slightest movement of trunk; herpetic vesicles were found upon the lips, and constant nausea existed. Cerebro-spinal meningitis was diagnosticated, and treated in the usual manner. Opisthotonos came on the following day, and confirmed the diagnosis. The disease followed a typical course for six days, when a sudden remission occurred, which lasted a week, the patient being almost entirely free from pain. At the end of a week, however, all the symptoms reappeared, and continued five days, the opisthotonos being less severe than before. A complete intermission succeeded, and lasted ten days, when a third attack set in; there was no opisthotonos, however, and scarcely any herpes. Morphia was given at this time in small, frequently repeated doses, hypodermically, after Ziemssen, with marked benefit; the patient became much better on the third day, the fever disappeared, and in a short time he was going down to his meals. After this he had repeated paroxysms of hemicrania and sciatica whenever the weather was damp and chilly; these paroxysms became less and less severe under potassium iodide and mercuric chloride. This case was chiefly interesting from its protracted periodicity. Hirsch claims to have met with many such, and it would seem to belong to his third class of the sporadic type.

Paralysis. — E. P., seaman, native of New Hampshire, age twenty-seven. Came into hospital with almost complete paraplegia, headache, dim vision, suffused eyes, retention of urine, and obstinate constipation. There was marked analgesia and some anæsthesia of the paralytic region. The attack was sudden, coming on in a few hours after the patient had been sleeping in a hammock with his back exposed to a draught. There was no evidence of syphilis. There was slight pain in lumbar region on bending the body, but no tenderness on pressure. Under tonics and the induced current, all the symptoms rapidly passed away except the vesical paresis. An electrode was introduced into the bladder, and the induced current passed till the bladder could be felt grasping the pole. Immediate improvement ensued, the patient being able to pass his urine, though slowly, without a catheter. The current was passed in a similar manner on the two following days, when perfect control of the bladder was obtained.

Eczema. — W. W., marine, native of New Jersey, age forty-five. Entered the hospital with a large eczematous patch, of six years' duration, on the anterior aspect of the right leg and ankle. He had repeatedly undergone the routine constitutional and local treatment without material benefit. The foot was elevated, quiet maintained, and the parts kept in an atmosphere of carbolic acid by envelopment in lint saturated with a forty per cent. solution. After ten days of this treatment no vesicles were found, the surface looking quite smooth and pale. A fifteen per cent. carbolized ointment was then applied on lint, and continued six weeks, when the involved skin was nearly the color of the surrounding parts, and perfectly smooth. The itching, which was intolerable in the beginning, disappeared after the tenth day. If similar results from this treatment could be obtained in a number of cases, the question of the nature of eczema would again become conjectural.

Operation for Contracted Meatus following Phagedenic Chancroid of Penis. — F. R., seaman, native of Massachusetts, age twenty-nine. Was admitted to hospital with phagedenic chancroid of glans penis; there was phymosis, with great preputial œdema. His hospital ticket stated that phymosis and gangrene had existed two days prior to his transfer to hospital. The prepuce was split up, disclosing a completely gangrenous condition of the glans and five centimetres of the body of the penis. Carbolized dressings were applied, and, there being considerable fever and depression, milk-punch and quinine were given. The patient did well, the slough separating in ten days. Contraction of the meatus followed in a few weeks, of a sufficient degree to render urination difficult and very slow. A small triangular segment of tissue on the dorsum of penis, including all between the integument and mucous membrane of urethra, was removed, and the skin and mucous membrane were stitched together. A redundant prepuce, caused by the loss of tissue, was also removed at this time. The parts healed in a few days, and the patient was sent to duty. He returned to the hospital six weeks subsequently with pneumonia. I examined the meatus, and found that a No. 3 sound could scarcely be passed, micturition being more difficult than ever. He made a rapid convalescence from the pneumonia, and when well enough to take ether I followed the suggestion of Dr. Samuel Cabot, and, passing one blade of a pair of scissors into the urethra, split the penis open upon the dorsum for five centimetres; the skin and mucous membrane were sewed together, and the parts dressed with carbolic acid. The wound healed kindly, and in a few weeks the man went to duty. A No. 18 sound was passed with ease before he left. It is now six months since the operation, and no contraction has taken place.

Chronic Orchitis. — Four cases of chronic orchitis, with great enlargement, two being gonorrhœal and two traumatic, were treated after Dr. Fessenden Otis's method. The glands were first poulticed several days, inunctions of mercurial ointment being used every night. Adhesive strips, applied as tightly as possible, were then kept on for two or three days, when poulticing and inunction were again resumed. Almost immediate improvement followed in every case; great reduction took place in a week, and in three of the cases the glands were of normal size in six weeks; the fourth, which was of a year's duration prior to commencement of treatment, was cured in nine weeks. These results are certainly encouraging, and hospital surgeons should be gratified that such a large class of chronics can be so easily disposed of.

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REPORTED MORTALITY FOR THE WEEK ENDING JULY 19, 1879.

Cities.	Population estimated for July, 1879.	Reported Deaths in each.	Annual Death-Rate per 1000 during the Week.	Percentage of total Deaths from				
				The Principal "Zymotic" Diseases.	Diarrhœal Diseases.	Scarlet Fever.	Diphtheria and Croup.	Pneumonia.
New York	1,085,000	833	40.03	43.94	35.41	3.24	1.32	3.12
Philadelphia	—	—	—	—	—	—	—	—
Brooklyn	564,400	331	30.58	41.99	35.65	—	1.51	1.81
Chicago	—	274	—	40.51	31.39	1.82	2.92	1.09
St. Louis	—	182	—	36.26	29.12	.55	—	1.10
Baltimore	365,000	222	31.71	40.99	28.83	4.50	1.35	.90
Boston	360,000	144	20.85	32.64	22.22	1.39	5.56	2.08
Cincinnati	280,000	190	35.33	38.42	27.37	5.26	2.11	2.11
New Orleans	210,000	83	20.61	31.32	19.28	—	—	2.41
District of Columbia	160,000	109	35.52	33.03	27.52	—	.92	.92
Cleveland	—	96	—	40.63	31.25	3.13	1.04	—
Pittsburgh	—	—	—	—	—	—	—	—
Buffalo	—	—	—	—	—	—	—	—
Milwaukee	—	56	—	33.93	23.21	—	8.93	3.57
Providence	101,500	51	26.20	25.49	23.53	—	1.96	1.96
New Haven	60,000	30	26.07	40.00	33.33	—	3.33	3.33
Charleston	57,000	59	53.97	16.95	11.86	—	1.69	—
Nashvilie	27,000	19	36.69	21.05	15.79	—	—	—
Lowell	53,300	29	28.36	48.28	41.33	—	3.48	3.48
Worcester	52,500	19	18.87	26.32	15.79	10.53	—	10.53
Cambridge	51,400	17	17.24	47.06	23.53	5.88	17.65	—
Fall River	48,500	37	39.78	56.76	32.43	18.92	—	—
Lawrence	38,200	27	36.86	51.85	51.85	—	—	—
Lynn	34,000	11	16.87	27.27	—	—	9.09	—
Springfield	31,500	12	19.86	41.67	25.00	8.33	—	16.67
New Bedford	27,000	11	21.24	27.27	18.18	—	—	9.09
Salem	26,400	7	13.83	57.14	—	—	42.86	—
Somerville	23,350	10	22.33	20.00	20.00	—	—	—
Chelsea	20,800	7	17.55	28.57	—	—	14.29	—
Taunton	20,200	4	10.32	25.00	25.00	—	—	—
Holyoke	18,200	14	40.11	35.71	14.29	7.14	7.14	—
Gloucester	17,100	1	3.05	—	—	—	—	—
Newton	17,100	—	—	—	—	—	—	—
Haverhill	15,300	3	10.22	—	—	—	—	—
Newburyport	13,500	5	19.31	—	—	—	—	—
Fitchburg	12,500	2	8.34	—	—	—	—	—

Two thousand eight hundred and ninety-five deaths were reported against 2474 of the previous week: 1139 from the principal "zymotic" diseases, 876 from diarrhœal diseases, 265 from consumption, 70 from scarlet fever, 59 from diphtheria and croup, 59 from pneumonia, 40 from malarial fevers, 28 from bronchitis, 27 from typhoid fever, 21 from whooping-cough, 20 from direct solar heat, 19 from cerebro-spinal meningitis, 18 from measles, nine from erysipelas, five from trismus nascentium, two from pleurisy, none from small-pox. From *malarial fevers*, 12 deaths were reported in New York, nine in New Orleans, six in

Brooklyn, five in St. Louis, three in Baltimore, two in District of Columbia, one in Chicago, New Haven, and Nashville. From *bronchitis,* 16 in New York, four in Brooklyn, two in St. Louis and Boston, one in Chicago, Baltimore, Cincinnati, and District of Columbia. From *typhoid fever,* four in New York and St. Louis, three in Cincinnati, two in Baltimore, Boston, Charleston, and Fall River, one in Chicago, New Orleans, District of Columbia, Cleveland, Lowell, New Bedford, Salem, and Holyoke. From *whooping-cough,* five in Brooklyn, four in New York and Baltimore, three in Boston, one in Chicago, St. Louis, and District of Columbia. From *direct solar heat,* 10 in New York, six in Charleston, two in St. Louis, one in District of Columbia and Baltimore. From *cerebro-spinal meningitis,* seven in Chicago, three in New York, two in Baltimore and Cleveland, one in Cincinnati, Milwaukee, Lynn, Springfield, and Chelsea. From *measles,* seven in New York, five in Brooklyn, two in Cleveland, one in Chicago, St. Louis, Baltimore, and Cincinnati. From *erysipelas,* three in New York, two in Baltimore, one in Chicago, St. Louis, and District of Columbia. From *trismus nascentium,* three in Baltimore, two in Charleston. From *pleurisy,* one in Brooklyn and New Haven.

The noteworthy changes for the week are a very great increase in the mortality from all causes, from malarial fevers, typhoid fever, cerebro-spinal meningitis, and diarrhœa; a considerable increase from consumption; the disappearance of small-pox; and the occurrence of three deaths (the same as in the previous week) from yellow fever in Memphis. About two thirds the previous number of deaths per week are reported in New Orleans. In eighteen of the nineteen cities of Massachusetts, with an estimated population of 863,750, the only noteworthy change is an increase in diarrhœal diseases.

The heat was excessive in some places, with sudden changes. The meteorological record for the week in Boston was as follows: —

Date	Barometer.	Thermometer.			Relative Humidity.				Direction of Wind.			Velocity of Wind.			State of Weather.[1]			Rainfall.	
	Mean.	Mean.	Maximum	Minimum.	7 A. M.	2 P. M.	9 P. M.	Mean.	7 A. M.	2 P. M.	9 P. M.	7 A. M.	2 P. M.	9 P. M.	7 A. M.	2 P. M.	9 P. M.	Duration.	Amount in Inches.
July 13	29.935	71	83	60	64	45	62	57	0	E	SW	0	10	14	C	C	C	—	—
" 14	29.909	77	92	64	60	41	73	58	SW	SW	SW	10	10	9	F	C	C	—	—
" 15	29.862	78	90	69	72	69	60	67	W	SE	SW	6	9	9	C	F	O	—	—
" 16	29.727	78	93	66	66	43	80	63	W	W	SW	12	12	16	C	F	O	—	.64
" 17	29.722	71	80	66	61	37	56	51	W	NW	NW	18	19	10	C	F	C	—	—
" 18	30.009	60	67	58	77	67	88	77	NE	E	S	8	12	6	F	C	F	—	.05
" 19	30.175	60	66	55	88	75	94	86	N	E	SE	8	17	4	O	F	C	—	—
Week.	29.906	71	93	55				66	SW			1627 miles.						1.75	.69

[1] O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening.

During the week ending July 26th, 85 cases and 37 deaths (total deaths for the week 71) from yellow fever were reported in Memphis, showing a very high rate of mortality; four cases (refugees) and two deaths occurred in Louisville; three and one death (refugees) in New York; one death (refugee) at Shelbyville; a few cases and one death at Mississippi City; and one death (from Havana) in Brooklyn. As usual at this season of the year, a considerable number are detained at the quarantine stations. Illinois, Kentucky, Tennessee, Mississippi, and Louisiana have adopted the regulations of the National Board of Health.

For the week ending June 28th, in 149 German cities and towns, with an estimated population of 7,557,941, the death-rate was 28.2, an increase of 0.7 over the previous week. Consumption and diarrhœal diseases still increasing. Four thousand one hundred and two deaths were reported: 800 from diarrhœal diseases, 532 from consumption, 287 from acute diseases of the respiratory organs, 89 from diphtheria and croup, 54 from scarlet fever, 52 from whooping-cough, 46 from measles, 42 from typhoid fever, 23 from puerperal fever, four from typhus fever, three from small-pox, one from simple cholera. The death-rates ranged from 14.8 in Potsdam to 46.4 in Berlin; Königsberg 37.0; Dantzic 30.6; Breslau 33.1; Munich 35.7; Stuttgart 21.2; Dresden 26.1; Nuremberg 22.6; Leipsic 16.8; Hamburg 21.7; Hanover 18.0; Bremen 20.6; Cologne 22.6; Frankfort-on-the-Main 19.7; Strassburg 32.9; Darmstadt 23.0. Also for the same week, Vienna 26.7; Paris 24.0; Prague 39.8.

For the week ending July 5th, in the 20 English cities having an estimated population of 7,383,999, the death-rate was 17.9, a decrease of 0.4 from the previous week, with a considerable increase in small-pox (London) and respiratory diseases; measles and scarlet fever were much less fatal. Two thousand five hundred and thirty-one deaths were reported: 197 from diseases of the respiratory organs, 104 from measles, 84 from scarlet fever, 69 from whooping-cough, 42 from diarrhœa, 30 from fever, 18 from diphtheria, eleven from small-pox (in London). The death-rates ranged from 9.5 in Portsmouth to 27 in Newcastle; London 17.4; Brighton 15.3; Bristol 16.9; Birmingham 17.8; Liverpool 21.2; Manchester 22.1; Leeds 17.2. For Edinburgh 18, Glasgow 19, Dublin 26 (six from small-pox). In the same week, Geneva 9.1; Zürich 19.0; Basle 11.4; Lucerne 16.2; Vevay 11.5; in the twenty prominent Swiss towns there is no "zymotic" disease very prevalent, diphtheria having caused only five deaths for the week. In Brussels the rate was 17.1; Antwerp 25.7; twenty-eight Belgian towns with a population over 10,000, 21.9; twenty-four smaller towns 22.5. Paris 23.4. Small-pox is quite prevalent in Paris, Marseilles, Rheims, Vienna, Budapesth, St. Petersburg, Calcutta, Bombay, and Madras; less so in Lisle, Breslau, Warsaw, Naples, Milan, Boulogne, Lisbon.

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